

AquaVitae

Case study 9 - Offshore production of blue mussels

KEYWORDS

Blue mussels, exposed areas, modification of novel production technologies, hatchery production, biofouling treatment, settlement, mussel seed, spat.

SPECIES

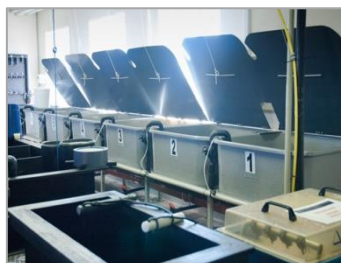
- *Mytilus edulis* (blue mussel)

GEOGRAPHICAL BOUNDARIES

Case study 9 takes place in the Northern Atlantic with a focus on activities in Ireland and Scandinavia, more specifically in the Westcoast of Sweden and the Great Belt area, Denmark. In addition, CS9 will also look into the experience with mussel production in high-energy areas in the USA. Innovation and tech transfer are key priorities enabling the transnational transfer of knowledge. CS9 contributes to both the Belém and Galway statements.

GOALS

- Modify and test novel mussel production systems to fit conditions in high-energy areas e.g. off-shore.
- Develop a protocol for hatchery production of mussel seed.
- Develop heat-based anti-fouling methods to be used in the field.



AT A GLANCE

- Project period: 2019-2023
- Modification of mussel production system to exposed areas.
- Easy to operate hatchery protocol for mussel seed production.
- Grow-out tests of hatchery produced mussel seed.
- Stimulate mussel farming in exposed areas by technological improvements.
- Development of submerged tube and net production system for the production in exposed areas.
- Testing of mussel raft on concrete and steel for production in exposed areas.
- Development of protocol for non-toxic antifouling method.
- Produce field-based antifouling technology.



Main activities take place in Denmark, Sweden, Ireland and the US.



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CHALLENGES

The main challenges with mussel production in exposed areas in the northern Atlantic are:

- Development of robust production technologies adapted to local conditions.
- Ensure a stable supply of mussel larvae/seed.
- Ensure high-quality mussels without biofouling by using non-toxic field based antifouling methods.

EXPECTED RESULTS

- Development and modification of novel production systems for mussel production adapted to the conditions in exposed areas.
- Ensure stable seed production by developing a hatchery protocol for mussel seed that is easy to operate for mussel farmers.
- Development of non-toxic heat-based antifouling method that can be used at the farm site.
- Provide technological improvements and protocols to stimulate increased production of blue mussels in exposed areas in the northern Atlantic.

EXPECTED USERS

- Blue mussel farmers and, potentially, also other bivalve and seaweed farmers.
- Government organisations that regulate bivalve and seaweed activities.
- Companies with activities in exposed areas like wind parks where co-used of space could be relevant.
- Research institutes working with suspended bivalve aquaculture production or other lower trophic organisms.



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WORKPLAN

Two different mussel productions systems will be tested at two different locations in Denmark, one modified tube and net system that can be submerged, and a classical “Spanish” raft made of concrete and steel. The focus will be on adjustment of the two systems to the local conditions and to document how the two different systems perform in exposed areas. The work is carried out in collaboration with two mussel farmers.

A blue mussel seed hatchery protocol easy to operate will be developed and tested. Based on an existing initial protocol developed in Ireland combined with practical training and knowledge transfer to Denmark, the protocol will be adjusted and tested, including tests of grow-out of hatchery produced mussel seed. The final protocol will then be tested in Sweden.

In Sweden, a non-toxic antifouling heat-based method will be developed and tested in corporation with a mussel farmer. Initial laboratory experiments identifying optimal temperature and exposure time for antifouling treatments of blue mussels will be carried out before field testing. Furthermore, equipment to carry out field antifouling heat-based treatments will be developed, which will be used to test the heat-based antifouling treatment method at a commercial mussel farm.

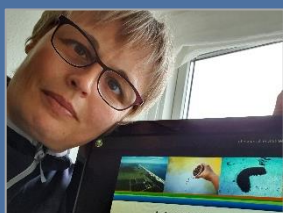
TEAM

1. DTU (Denmark)
2. GMIT (Ireland)
3. Cartron Point Shellfish (Ireland)
4. IVL (Sweden)
5. Bohus Havsbruk (Sweden)
6. UNE (US)

LINKS



Webinar on fouling on blue mussels:
<https://bit.ly/av-fouling-mussels>



**Leader of the Off-shore Production
of Blue Mussel Case Study**
Pernille Nielsen DTU Aqua
peniel@aqu.dtu.dk

 www.aquavitaeproject.eu
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